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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,944	04/21/2004	Gregory J. Smith	50019.276US01/P05838	7191
23552	7590	05/24/2006	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			LAXTON, GARY L	
			ART UNIT	PAPER NUMBER
			2838	
DATE MAILED: 05/24/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/828,944

Applicant(s)

SMITH, GREGORY J.

Examiner

Gary L. Laxton

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 9-14 and 23-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Umminger et al (US 6,476,589).

Umminger et al disclose an inductor (16); switching circuit (13); sense circuit (17); feedback circuit (20, 21); comparator circuit (18); one shot circuit (11); n-Fet (13); resistance circuit (15; col. 4 line 22); PLL circuit (34).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-8, 20, 21 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umminger et al (US 6,476,589) in combination with Roman (US 6,204,649).

Claims 3-8; Umminger et al disclose an inductor (16); switching circuit (13); sense circuit (17); feedback circuit (20, 21); comparator circuit (18); one shot circuit (11); n-Fet (13); resistance circuit (15; col. 4 line 22); PLL circuit (34).

However, Umminger et al do not disclose the resistance circuit being a resistor.

Umminger et al disclosed using the resistance of the FET to measure the current.

Roman teaches using an actual resistor to measure the current (128 & resistor) of the inductor to generate a control signal used in the control of the switching of the transistors to eliminate noise normally generated from the switching of conventional regulators.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Umminger et al to include a resistor to sense the current through the inductor as taught by Roman in order to use the current through the inductor to control the switching times of the switching circuit in order to reduce EMI noise normally generated by switching regulators.

Claims 20, 21 and 29; Umminger et al disclose an inductor (16); switching circuit (13); sense circuit (17); feedback circuit (20, 21); comparator circuit (18); one shot circuit (11); n-Fet (13); resistance circuit (15; col. 4 line 22); PLL circuit (34).

However, Umminger et al do not disclose the freewheel switch (15) being a diode.

Art Unit: 2838

Roman teaches that switching regulator 102 includes switching transistor(s) 106.

Switching transistor(s) 106 can be implemented as a standard single switching transistor (along with a freewheeling diode) or a pair of synchronously switched transistors (col. 3 lines 36-50).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Umminger et al to include a diode in place of switch (15) in order to implement a standard well known switching regulator using a single switching transistor with freewheel diode as is well known in the art and as taught by Roman.

6. Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umminger et al (US 6,476,589) in combination with Voyce (US 4,754,277).

Umminger et al disclose the claimed subject matter in regards to claim 13 supra, except for a trans-conductance circuit and a current source circuit.

Voyce teaches a phase lock loop (figure 4) comprising a trans-conductance circuit (98) and current source (104) in order to improve the linearity sweep of the output frequency.

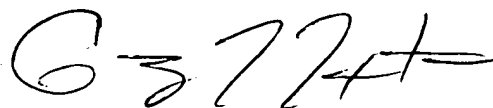
Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Umminger et al to include a PLL circuit that provides a bias signal and improves the linearity sweep of the output frequency as taught by Voyce; wherein the PLL circuit includes a trans-conductance circuit and current source that provides the bias signal.

Art Unit: 2838

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L. Laxton whose telephone number is (571) 272-2079. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on (571) 272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Gary L. Laxton  
Primary Examiner  
Art Unit 2838

5/22/2006